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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,704	11/29/2001	Jong Won Seok	P67356US0	2611
43569	7590	02/14/2006	EXAMINER	
MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006			HENNING, MATTHEW T	
			ART UNIT	PAPER NUMBER
			2131	

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/995,704	Applicant(s) SEOK ET AL.	
	Examiner Matthew T. Henning	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1 This action is in response to the communication filed on 11/28/2005.

2 **DETAILED ACTION**

3 ***Continued Examination Under 37 CFR 1.114***

4 A request for continued examination under 37 CFR 1.114, including the fee set forth in
5 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is
6 eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)
7 has been timely paid, the finality of the previous Office action has been withdrawn pursuant to
8 37 CFR 1.114. Applicant's submission filed on 10/7/2005 has been entered.

9 ***Response to Arguments***

10 Regarding applicants' argument that because the PN signal is multiplied it is not only
11 delayed, the examiner does not find the argument persuasive. The claims do not recite that the
12 PN signal is "only delayed" and nothing else. In Lee, the multiplier would delay the PN signal,
13 and therefore meets the limitation. Therefore, the examiner does not find the argument
14 persuasive.

15 Regarding applicants' argument that in the interpretation of Lee by the examiner the PN
16 signal is "the original signal" the examiner does not find the argument persuasive. The claim
17 recites 'a delayed original audio signal'. The PN signal is "a original audio signal" separate
18 from "the original audio signal" of line 1 of the claim. The claim does not require the delayed
19 audio signal be derived from the first original audio signal. If the applicants' had meant to limit
20 the delayed signal to a delayed version of the original audio signal, as opposed to a delayed
21 version of an original audio signal, the limitation should have been clearly specified in the
22 claims. As such, the examiner does not find the argument persuasive.

Regarding applicants' argument that "the Examiner alleges that Hannigan teach the linear prediction analysis means recited in claim 1" the examiner does not find this argument persuasive. This is due to the fact that the examiner has not alleged this but instead alleged that Hannigan in view of Hayashi met the limitations of claims 9-14. Therefore, the examiner does not find the argument persuasive.

Regarding the applicants' argument that Hannigan did not disclose linear prediction analysis of the watermarked signal, the examiner has considered the argument and does not find the argument persuasive. Hannigan Col. 13 Lines 9-13 clearly disclosed computing for each sample an estimate of the original sample value, which meets the limitation of "generating a prediction coefficient" and therefore meets the limitation of the claim. As such, the examiner does not find the argument persuasive.

Claims 1-14 have been examined.

All rejections presented in the final action dated 8/26/2005 have been maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al.

(US Patent Number 5,822,360) hereinafter referred to as Lee.

1 Regarding claim 1, Lee disclosed an apparatus for embedding a watermark into an original audio
2 signal, comprising: a linear prediction analysis means for generating a prediction coefficient of
3 the original audio signal by means of a linear prediction analysis after the original audio has been
4 inputted thereto (See Lee Col 10 Lines 19-25); a residual signal output means for outputting a
5 residual signal of a delayed original audio signal by filtering the delayed original audio signal
6 using the prediction coefficient generated from the linear prediction analysis means (See Lee
7 Col. 10 Lines 10-18); an echo signal generation means for generating an echo signal of the
8 original audio signal by synthesizing the prediction coefficient of the original audio signal and
9 the residual signal of the delayed required audio signal (See Lee Col. 10 Lines 26-53); and a
10 copyright information insertion means for generating a watermarked audio signal by combining
11 the original audio signal and the echo signal of the original audio signal having copyright
12 information therein (See Lee Col. 2 Lines 22-39, and Col. 10 Lines 62-65).

13 Regarding claim 2, Lee disclosed that the linear prediction analysis means generates the
14 prediction coefficient, which is able to predict an inherent spectrum of the audio by virtue of the
15 linear prediction analysis (See Lee Col. 10 Lines 19-25).

16 Regarding claim 5, Lee disclosed that the echo signal generation means is a linear
17 prediction synthesis filter for outputting the echo signal of the original audio signal by
18 synthesizing the prediction coefficient of the original audio signal outputted from the linear
19 prediction analysis means and the residual signal of the delayed original audio signal outputted
20 from the residual signal output means (See Lee Col. 10 Lines 10-39).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee as applied to claim 1 above, and further in view of Hannigan et al. (US Patent Number 6,674,876) hereinafter referred to as Hannigan.

Regarding claims 3 and 4, Lee disclosed a linear prediction analysis filter for outputting the residual signal by eliminating the inherent spectrum of the delayed original audio signal after filtering the delayed original audio signal using the prediction coefficient (See Lee Col. 10 Lines 10-39), but failed to disclose a means for delaying the original signal for a predetermined time, and the time being the key to detecting the watermark.

Hannigan teaches that in an audio watermarking system, the original signal can be delayed by predetermined amounts and then added to the original signal in order to embed the watermark, and that the delay times are the key to the watermark (See Hannigan Col. 8 Lines 17-32).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Hannigan in the watermarking system of Lee by delaying the original signal by predetermined amounts in order to embed a watermark in the signal. This

1 would have been obvious because the ordinary person skilled in the art would have been
2 motivated to provide additional messages in the watermarked audio.

3 Regarding claims 6-8, Lee disclosed an error correction encoder for granting an error
4 correction function to the copyright information embedded into the original audio signal (See
5 Lee Col. 9 Line 65 – Col. 10 Line 2); and a summer for outputting a watermarked audio signal
6 by adding a signal outputted from the watermark generator the original audio signal (See Lee
7 Col. 10 Lines 62-65). However, Lee failed to disclose generating the sign of the watermark data
8 based on the message data.

9 Hannigan teaches that in a watermarking system, the watermark data can be added or
10 subtracted from the original signal depending on the data to be embedded and that a binary 1
11 would be added and a binary 0 would be subtracted (See Hannigan Col. 8 Line 60 – Col. 9 Line
12 14 and Col. 11 Lines 6-15).

13 It would have been obvious to the ordinary person skilled in the art at the time of
14 invention to employ the teachings of Hannigan in the watermarking system of Lee by producing
15 sign information for the watermark based on the data to be embedded, and thus adding when a 1
16 was to be encoded and subtracting when a 0 was to be encoded. This would have been obvious
17 because the ordinary person skilled in the art would have been motivated to enhance the
18 delectability of the watermark and to reduce the perceptibility of the watermark.

19 Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hannigan,
20 and further in view of Hayashi et al. (US Patent Number 6,434,253) hereinafter referred to as
21 Hayashi.

1 Regarding claim 9, Hannigan disclosed an apparatus for detecting a watermark from a
2 watermarked audio signal using an echo signal of a delayed original audio that is delayed for a
3 predetermined delay time (T), the apparatus comprising: a linear prediction analysis means for
4 generating a prediction coefficient by means of the linear prediction analysis of the watermarked
5 audio signal (See Hannigan Col. 12 Line 61 – Col. 13 Line 15); a linear prediction analysis filter
6 for outputting a residual signal by eliminating an inherent spectrum of the original audio signal
7 after filtering the watermarked audio signal using the prediction coefficient (See Hannigan Col.
8 12 Line 61 – Col. 13 Line 15); a short-time autocorrelation means for calculating an
9 autocorrelation using the residual signal outputted from the linear prediction analysis filter (See
10 Hannigan Col. 8 Lines 33-36); and a sign detection means for detecting the watermark
11 information after detecting a sign of the value outputted from the short-time autocorrelation
12 means (See Hannigan Col. 13 Lines 5-9). However, Hannigan did not disclose the watermark
13 information including copyright information.

14 Hayashi teaches that audio watermarks can contain copyright information (See Hayashi
15 Col. 1 Lines 32-35).

16 It would have been obvious to the ordinary person skilled in the art to employ the
17 teachings of Hayashi in the audio watermarking system of Hannigan by placing copyright
18 information in the audio watermark. This would have been obvious because the ordinary person
19 skilled in the art would have been motivated to protect the copyrights of the audio data.

20 Regarding claim 10, the combination of Hannigan and Hayashi disclosed an error
21 correction decoder for outputting the error- corrected copyright information through an error-

1 correction decoding step after the resultant output sign detected from the sign detector 204 is
2 inputted thereinto (See Hannigan Col. 13 Lines 21-23).

3 Regarding claim 11, the combination of Hannigan and Hayashi disclosed that the linear
4 prediction analysis means generates the residual signal by combining the residual signal of the
5 original audio signal and the residual signal of the delayed original signal (See Hannigan Col. 12
6 Line 61 – Col. 13 Line 15).

7 Regarding claim 12, the combination of Hannigan and Hayashi disclosed that the short-
8 time autocorrelation means finds out the residual signal of the original audio signal and the
9 residual signal of the delayed original audio signal by calculating the autocorrelation of the
10 residual signal (See Hannigan Col. 8 Lines 33-37).

11 Regarding claim 13, the combination of Hannigan and Hayashi disclosed that the sign
12 detection means investigates a correlation sign of the residual signal of the original audio signal
13 and the residual signal of the delayed original signal, thereby outputting an output value, i.e., 0 or
14 1, according to the correlation sign (See Hannigan Col. 13 Lines 1-9).

15 Regarding claim 14, see the rejection of claim 9 above.

16 ***Conclusion***


17 Claims 1-14 have been rejected.


18 Any inquiry concerning this communication or earlier communications from the
19 examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790.
20 The examiner can normally be reached on M-F 8-4.

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1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's
2 supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the
3 organization where this application or proceeding is assigned is 571-273-8300.

4 Information regarding the status of an application may be obtained from the Patent
5 Application Information Retrieval (PAIR) system. Status information for published applications
6 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished
7 applications is available through Private PAIR only. For more information about the PAIR
8 system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR
9 system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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